The RARS EXCITER

Issue 241 - April, 1990 - Club Repeaters: 146.04/64 , 223.04/224.64 , & 444.5/449.5

The Families of RARS: Meet the Kellum's

FROM ANITA, KC4AQB:

I had a friend years ago suggest that I become a HAM, however, after studying the code, I said "NO WAY". In 1984, I married Sonny after he had accepted a job as Territory Sales Manager for SmithKline Beecham Clinical Laboratories and moved to Raleigh. I decided to leave Montgomery, and join him in Raleigh. We bought a home in North Raleigh, where I also found work. We had each other as friends, but our friends and family were back in Alabama.

One day, Sonny suggested I take the class at Wake Tech to obtain a Ham License (Bruce Eggers was working on putting this one together, and every night for the first three weeks it was a treasure hunt to find which door the class would be held behind). I studied code as I drove to work - on my lunch hour - on my way to class after work - at night - on week-ends - and, By golly - with Sonny's faith and friendly persuasion, I passed the code at RARS May meeting in 1987 and shortly thereafter I passed the Tech exam.

Anita (KC4AQB) and Sonny (WA4JWE) Kellum

The RARS network of people with their vast knowledge of radio, antennas, child rearing, marriage-counseling, recipes, good times, bad times, the latest on sports, Medicine, and all the other "HOW TO'S" and "HOW DO YOU DO'S" has become my family. I could not ask for a better group of people to be a part of my life. GOD BLESS!

[Ed. Note: Anita lists her work as a drafter in Civil/Structural & Planning Dept. for The Wooten Engineering Co. Her other hobbies are Arts & Crafts, Growing Daylilies, and being a Yardsale Junkie.]

Kellum's continued, page 7

The Raleigh Amateur Radio Society, Inc. (RARS), founded in 1969, has grown to be one of the premier radio clubs in North Carolina. Current membership exceeds **350**.

The objectives of the club are to promote world wide friendship through Amateur Radio; to be of public service by providing radio communication in times of disaster, emergency, or civic need; to educate members in radio technique, and to assist in obtaining Amateur Radio licenses.

All persons interested in Amateur Radio, currently licensed or not, are eligible to apply for membership to the club.

Dues to the club are $10.00 per year (which runs from July 1 to June 30). Applications for membership may be obtained from any of the officers named below; from the newsletter editor, named on the facing column; or at any RARS Meeting.

Club meetings are held the first Wednesday of every month, 7:30 PM, at the Raleigh YMCA, 1601 Hillsborough St.

In addition to the many social and special events, the club sponsors a 2 m repeater, W4DW, on 146.04/64 MHz, and WA4PEN on 223.04 / 224.64 MHz. Both repeaters cover all of Raleigh, and most of the surrounding Wake County area. Auto-patch privileges are available on W4DW to duly licensed RARS members. Future plans call for additional repeaters on the 50, 146, and 450 MHz amateur bands.

1990 Officers:

President:	Jim DuBreck, N4BYO 1209 Shelly Road Raleigh, NC 27609 781-9437
Vice President:	John Thomas, KK4JB 5228 Cedarwood Drive Raleigh, NC 27609 782-1609
Secretary:	Ronny Reams, WA4MJF 3509 Rolesville Road Wendell, NC 27591 266-4434
Treasurer:	Tim Buehlmann, N4IQA 1314 Chaney Rd. Raleigh, NC 27606 851-7738

The EXCITER is published monthly by the Raleigh Amateur Radio Society, and is mailed at no cost to its members.

Letters to the Editor, technical articles, items of interest to the ham community and guest editorials are actively solicited.

Any article published in the EXCITER does not necessarily represent the views of, the Officers, Board of Directors, Editor, or Society Membership, nor does publication thereof represent concurrence by the Officers, Board of Directors, Editor, or Society membership with the contents of the article.

Articles will be printed at the discretion of the Editor, and no article will be published unless it is accompanied by the name(s) of the person(s) submitting the article.

All copy must be in the hands of the editor by the end of the Board of Director's meeting on the third Wednesday of each month. Articles submitted for publication may be hand or type written, an ASCII file on disk (IBM or APPLE format), transmitted electronically via telephone modem, or on the ham bands using RTTY or PACKET.

Ham related items for sale by the members will be advertised without charge for one issue, but may be re-submitted as often as desired. These ads must be non-commercial in nature.

Commercial ads will be run in return for the following donations to the club:

	Single Issue	Full Year
Business Card	$5.00	$25.00
Quarter Page	$10.00	$50.00
Half Page	$20.00	$100.00
Full Page	$30.00	$150.00

(Commercial ads must be of "camera-ready quality," and obviously can not be sent via ham bands.) Due to the reprographic process used, no color copy can be accepted.

Advertisers are guaranteed a minimum monthly mailing of 375 copies.

Editor:	Vince Yakamavich, AA4MY 220 Carriage Trail Raleigh, NC 27614 847-8512 (Home) 850-5390 (Office)

SPECIAL SERVICE CLUB

ARRL

ARNS

Amateur Radio News Service

AMSAT

SOUTHEASTERN REPEATER ASSOCIATION

MEMBER

Minutes of the Meeting

The regular monthly meeting of the Raleigh Amateur Radio Society was held on 06 MAR 90 at Ballentine's Cafeteria in Cameron Village. This was the 10th annual Awards Banquet. President Jim DuBreck welcomed the members and their guests. After a fine buffet dinner, the awards were given.

The President presented plaques to the following members:

Outgoing President Pete Thatcher, N4HQZ
Outgoing Secretary Sue Meyer Parks, WB4USX
Hostess With The Mostess Anita Kellum, KC4AQB
Exciter Editor Vince Yakamavich, AA4MY

Pete Thatcher presented plaques to:

Outgoing Training Director Jim DuBreck, N4BYO
Outgoing Presidential Adviser Cole Thatcher, W1HZQ

Certificates were awarded to the following:

Chuck Littlewood (K4HF),
Bruce Eggers (WA9NEW),
Ed Alderman (WA4PEN),
Alan Pitegoff (AB4OZ),
Dave Williams (AB4LR),
Chris Shackleford (KN4DT),
Rollin Ransom (NF4P),
Bill Weinel (KB4VTH),
Peter Bliss (W8DTD),
Billy Edwards (K4BWC),
Andy Singer (WK2F), and to the Creedmoor Volunteer Fire Dep•artment and The NC Army National Guard for their outstanding support of Field Day 1989.

Chuck Littlewood presented Sherry Reams (KB4EXL) her ARRL mixed Worked All States award.

The President announced that he had signed up twenty-one (21) new members from the recent class. This brings the society membership to 352.

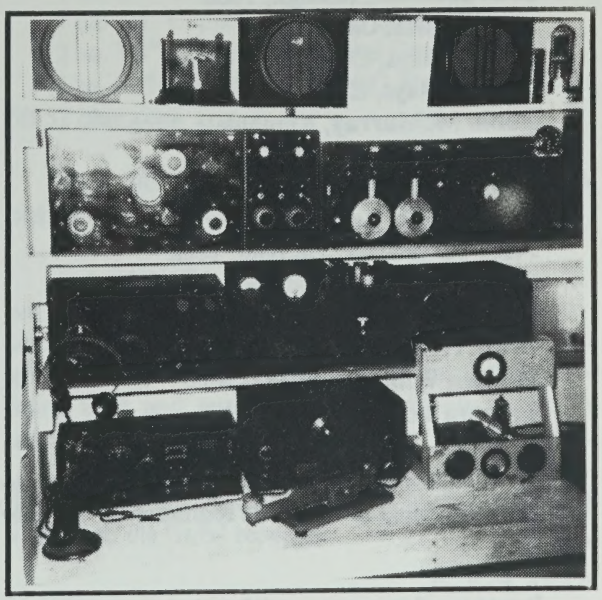
The door prize of an ASTRON RS-20M power supply was won by Joe, WD4MRD and a gift certificate to Crabtree mall was won by Walter AB4DQ.

A presentation on the early days of RARS Was Made By Bob Corns (K4MC) and Ed Alderman (WA4PEN).

A fine eveing was had by all.

Ronnie Reams, WA4MJF
RARS Secretary

April Meeting



The latest in VHF/UHF hi-tech?!?
Hardly!
Does it work?
You 'betcha!!
Come to the April meeting and see it first hand!!

VE REPORT

March 5th Session Results

Thirty six applicants crammed the McKimmon Center at NCSU on the evening of the 5th. Most were students in the RARS Novice / Tech training class; some were not. The results:

Mary Beam, Apex, Tech
Thomas Beam, Apex, Tech
Charles Britt, Garner, Novice
Thomas Byrd, Tech
JoAnn Cirra, Raleigh, Tech
Sue Doligalski, WB9TLY, Tech
Charlie Fields, N4TDY, EXTRA!!
Stan Goldsmith, Raleigh, Tech
Michael Hamlett, Hillsborough, Tech
Mike Haislip, Raleigh, General
John Irwin, Raleigh, Tech
Jeff Johnson, Cary, Tech
John Jaskolka, Raleigh, Tech
"Bud" Luck, Cary, Tech
Robert Mays, Chapel Hill, Tech
Zephyr Mays, Chapel Hill, Tech
Robin McMurray, Knightdale, Tech
John Moseby, KA4SNC, Tech
Fred Slipsager, Raleigh, Tech
Terry Smith, Raleigh, Tech
Peter St. Wecker, Durham, Tech
Audra Tawes, Sanford, Tech
Ed Tawes, Sanford, Tech
Chris Triantaphyllou, Raleigh, Tech
Stephen Williams, Apex, Tech
Barbara Yost, Raleigh, Tech

Several others earned partial credit (CSCEs), to complete their upgrade / license requirements another day.

It was good to see some "family interest" in obtaining licenses: .... **Terry Smith**, (XYL of AB4TD), **Barbara Yost** (XYL of N4VQT), & **Jeff Johnson** (son of N4UOF). Two husband / wife couples (The **Tawes'** & the **Beam's**), and a Father / Son (**Robert & Zephyr Mays**). Just goes to prove radio can be a "family affair!" Perhaps the others will generate some radio interest in their SOP ("significant other" person).

The Training crew (N4VQN, N4BYO, K4FAD, N4XPE & all others who were involved) should definitely take a bow: 84% of those tested at 5 WPM passed. Similarly, success rate on Novice & Technician writtens was a whopping 96%! This is up significantly from the previous class, and well above the national average of 65%.

VEs working the session were: Alan (AB4OZ) & John (K4FAD) on code; Marty (NY4H), Mike (AB4CH), and Bill (N1BA) on writtens; Rob (AB4FY), Ken (AB4RQ), and Vince (AA4MY) on Sign In / Out. Our thanks to these folks for donating their time & efforts -- couldn't do it without 'em!!

Next area exams: Sunday, April 8th, 11:00 AM at the RARS Hamfest!! Pre-registration REQUIRED. Contact Vince, AA4MY @ 847-8512.

RARS VEs -- PLEASE!! HELP!!!

'89 RARS Field Day Hold's ARRL ALL TIME Record!!

Didja' catch it in the ARRL's "National Contest Journal"? (Vol 18, No. 2 -- March / April 1990). Bigger'n life!! RARS holds the ARRL's ALL TIME record for Field Day, Class 7A (battery).

Taking a peek at the scores, we really tromped the K6AA group, who ran 8A back in '81 (one more xmtr than us); and VE3WE, who ran 9A bat (2 more xmtrs than us!). (Not to gloat too much, however, back in '88 K0NA ran 2 xmtrs (5 less than us), and beat our score by roughly 6K points! (Just goes to show, there's always room for improvement ...)

Once again, kudo's are in order for ALL who worked the '89 RARS Contest Field Day site! Will we have another record breaker in '90?!?

Tnx fer info: AB4EL - AA4MY

VHF/UHF SIG Report

The regular monthly meeting of the RARS VHF/UHF SIG was held at 1930 on 08 mar 90. Present were: WD4MYM, AB4FY, WA4PEN, WA4LHE, KN4AK, KC4JJZ, KB4VYP, K4SAN, WA4MJF, AB4OZ, KC4NJB, N4SSU, N4UOQ, and KB4EXL.

Chairman Ed opened the meeting with some announcements about general RARS activities to include the banquet, hamfest, etc. He also thanked Glenn and Alan for their good work in his absence last month.

Repeater Reports:

220 is doing fine except for an occasional nervous receiver.

440 is working with about 32 watts output. It is not as clean as it should be and a spectrum analysis by WA1WXL will be done soon. It is hoped that this will reveal the problem. The antenna for the 440 repeater will be erected at Dean Witter on the 10th of March (along with the packet node antenna.) The repeater will be in operation from the temporary site (which will be 150-200 feet higher than at Ed's house) by the end of this month.

50 has a tentative site in Wake Forest (one of split sites). The repeater will be fully solid state. It will have a Vic 20 controller.

There was a lot of discussion on the repeater activation. It was decided that the 440 will be linked to the 220. Access only from the 440 side. This would allow several of our members who have the "dual band" radios to partake of 220 especially the "trader's net", the Rocky Mount link, etc. Also this will serve as RARS introduction to the popular technique of cross-band linking.

A series of instructions in repeater theory will begin at the April meeting. These will be conducted by K4SAN.

The social was held and all enjoyed the baked goodies and fellowship.

The next meeting will be on 12 APR 90.

Sherry L. Reams, KB4EXL
Secretary

Homebrew SIG Report

The Homebrew SIG met on March 14, 1990 at the home of N1BA, Bill Ransier. Bill hosted the group and provided a technical presentation on the construction of noise bridges and their use. He demonstrated the calculation of coaxial cable electrical wavelength, calibration of the reactance dial, and the use of a noise bridge with an antenna tuner for matching impedances. Our thanks to Bill for a fine presentation.

Next month's SIG meeting will be hosted by N4VQT, Rick Yost, who will demonstrate the construction of 2 meter J-Pole antennas from copper tubing. We will assist as many attendees as possible in construction of their own J-Pole during the session. If you would like to build a J-Pole antenna, please come to the meeting and bring:

1 ea. 10' Copper Tube, 3/4" dia (straight not coiled)
1 ea. 3/4" Copper Tubing Tee
1 ea. 3/4" Copper Tubing 90 Degree Elbow
2 ea. 3/4" Copper Tubing End Caps
1 ea. 4' Section of RG-8U, RG-8M, or Equivalent 50-52 ohm coax

Spare propane torches would be appreciated in order to speed construction.

WA4PEN, Ed Alderman will be on hand to present operation and construction information about colinear vertical arrays for the 70 cm band. Here is a great opportunity to get a two meter base station antenna built and tested and get some tips on 70cm antennas. Hope you can make it!

Rick lives at 7204 St. Ledger Drive, (north) Raleigh. The meeting will be at 7:30 PM on April 11. Talk-in will be on the 04/64 repeater.

Jim Smith, AB4TD

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Anyone For Packet ?

One of my reasons for being a ham is the wide variety of technologies we can experiment with. Packet is specially interesting to me because it combines two loves - radio and computing. Imagine my disappointment though when I got on the air and found that congestion on the two frequencies used locally (145.01 and 147.54) made reliable contacts almost impossible. 145.01 is used to connect major packet nodes and 147.54 is used for individuals connecting to nodes or BBS's. This frequency plan was devised by the Wake Digital Communications Group (WDCG). Nodes are like voice repeaters except they can route your signal to another specific Node or user. Unfortunately, because of the geographical locations of Nodes in Wake County it is difficult for many of us to reliably use the system. An attempt has been made to improve the situation by putting up a Node on the Dean Witter Building near North Hills Mall. This is K4IWW-3 on 147.54 MHz. However, there is still only one BBS in Wake Co. (located in Cary), and it is quite busy.

To make a contribution to this I am proposing to set up a packet BBS at my QTH in far north North Raleigh. The BBS would be multi ported - local users would access it on say 145.09 MHz, congestion free, while outside contact would be on a beam antenna on 145.01 or 147.54 pointed at one of the major packet nodes. I am prepared to dedicate a PC with 20 Meg hard disk running 24 hours a day and a 30 watt transmitter running into a 7 dB gain vertical antenna. For TNC hardware I am proposing to use DRSI plug in boards. These are nice because each board supports 2 ports and you can have up to 4 plugged into a single PC.

As of now there is no Packet SIG within RARS. If there was I would have raised my proposal for discussion in that forum. Perhaps we should organize one, or, if there is only limited interest maybe it should be part of one of the existing SIGs. Comments, criticism and feedback would be welcome before I get into this too deeply.

Mike Gingell, KN4BS
home : 847-4779

Welcome New Members!!

Lets extend a warm welcome to 24 new members this month!

Mary Beam, Apex, awaiting Tech call
Thomas Beam, Apex, awaiting Tech call
Tom Byrd, Jr., Raleigh, awaiting Tech call
JoAnn Cirra, Raleigh, awaiting Tech call
Sue Doligalski, WB9TLY/KT, Cary
Tom Doligalski, N9CGD, Cary
Stan Goldsmith, Raleigh, awaiting Tech call
Michael Hamlett, Hillsborough, awaiting Tech
Wm. R. Hutchins, KM4UO, Chapel Hill
John Irwin, Raleigh, awaiting Tech call
John Jaskolka, Raleigh, awaiting Tech call
Jeff Johnson, Cary, awaiting Tech call
Robert Mays, Chapel Hill, awaiting Tech call
Zephyr Mays, Chapel Hill, awaiting Tech call
John Mosery, Durham, awaiting Tech call
Robin McMurray, Knightdale, awaiting Tech
Gary Pearce, KN4AQ, Raleigh
Terry Smith, Raleigh, awaiting Tech call
Peter St. Wecker, Durham, awaiting Tech call
Ed Tawes, Sanford, awaiting Tech call
Jean Tawes, Sanford, awaiting Tech call
Chris Triantaphyllou, Raleigh, awaiting Tech
Gregory Vasquez, KA1PKL, Carrboro
Stephen Williams, Apex, awaiting Tech call

With the addition of these fine folks to our roster, RARS now stands at **356 members (our highest ever!!)**.

To the new members, we wish you welcome, and hope that you will choose to become "radio-active" and participate in the many fine activities and events that RARS has to offer. It has been said, "You get out of an organization what you put in." We urge you to become **active** members within the club. Certainly with 350+ members, there is a wealth of knowledge and comaraderie available.

We're looking forward to meeting you at an upcoming meeting, or on the air. **Again, WELCOME!**

Meet the Kellum's

continued from page 1

FROM SONNY, WA4JWE:

My interest in electronics and radio started about the age of 5, when I received a (very scarce and costly) portable radio for Christmas. By the time my parents were up and about that Christmas morn, that radio was in a hundred pieces. I had woke very early, about 3 a.m. and tuned the radio around the band and of course no stations were on at that time of the morning, so I preceded to FIX said radio. Needless to say I received my birthday spanking on Christmas day and it wasn't even my birthday. But even then I was persistent and in a couple of hours, I had put all the tubes, batteries, dial, and chassis back in the case and it played very nicely, thank you! Later, I added large military earphones to this little portable, and was continually taking it apart and back together again.

After getting very disenchanted and tired of listening to the garbage on the CB Band (Shame, Shame, Dirty Word), I received a General Class License in early 1962, without ever having either a Novice or Tech ticket. My first rig was a Heathkit DX-100 and a Moseley CM-1 receiver, and I was very active during the 60's with QSL Cards from around the World. Anita and I only have 2 meter equipment at present, however, we would like a HF rig.

I have always had an interest in mechanics, physics, math, and electronics, and have found very few things (with the exception of watches and clocks) which were any problem to take apart and repair.

My vocation is Medicine, having been raised by a Mother who was a Registered Nurse and an Insurance Writing Father. I started working in the Hospital Laboratory while a Senior in High School, and from there I Graduated from University of Alabama School of Medical Technology in the early 60's.

After 20 yrs of working in Hospitals, Clinics and Commercial Labs, and doing Medical Research, and a six (6) year period, owning and operating a Residential Construction Co., and Qualifying Broker of Real Estate Co., I decided to sell Laboratory Services, first for a small Commercial Lab in Alabama, and for the last six (6) years, for SmithKline Beecham Clinical Laboratories.

During the time I was in High School, I became very interested in Aviation, and I currently hold a Single and Multi engine Commercial with Instrument and Flight Instructor ratings. I also have Basic, Advanced, and Instrument Ground School Ratings, and have approx 6,500 flight hours. Unfortunately the Sales Job is so demanding, this leaves very little time to soar with the birds.

I guess the understatement of my life was about eight (8) years ago, when I told Anita that since I had about two (2) weeks free time, I thought I would learn about Computers. Eight (8) years later, I am still Learning about Computers. Currently Anita and I have three (3) systems running, an IBM XT, a IBM clone, and the 286 system, and four TI-994A Texas Instrument systems in storage, waiting to become scarce and maybe the price to increase.

My interest lies in Medicine, Aviation, Computers, Electronics (which includes Ham Radio), Photography, Sales and Psychology of Selling, Management, and just tinkering around with something that doesn't work properly.

And when we find time, and the weather is just right, you can find us touring the country side on the Yamaha Venture Motorcycle (we carry the handheld 2 meter rig along, you can be sure).

Anita and I have six (6) Children: four (4) for me, and two (2) for her. We have five (5) grandchildren, all girls, but one (1) with two (2) more on the way. We also have 2 Pomeranian pups, Sir Smokie and Prince William.

Anita and I enjoy Raleigh, especially the weather and the friendly people we've found here . Thanks to all of you for making Anita and I feel right at home here in Raleigh.

Mutiny Anniversary

This is the 200th anniversary of the Bounty mutineers landing on Pitcairn Island. Pitcairn amateurs will use the special call sign VR200PI during 1990, followed by their personal call sign prefix.

W5YI Report
3/15/90

One YL Speaks Out

Guest Editorial by Connie, KB5LES
Great Falls (TX) Area ARC

Well, I've had my license almost a month now, so it's my turn to climb up on a soapbox. Don't get me wrong, this isn't the first time I've spoken out, and I guarantee that it wont be my last.

Did you OM's notice that QST cut the "YL News and Views" from the magazine? If you did, Good for You!! This section was only one page devoted strictly to women out of a more than 150 page magazine.

Okay, I'll concede that OMs and YLs ham differently! But, that's my point. To keep YLs happy and involved in amateur radio, which is a predominantly male oriented hobby, YLs often need to see and read about other YLs involved in the hobby. I happen to think that needle pointing pillows with a ham flare is just as much a part of hamming as completing a QSO with a rare DX station. Check out my shirt and extra baggage at our meeting, and I'll show you what happens when you integrate hobbies.

The reasons for reading any of the ham magazines vary on a person's particular interest. I'm going to miss this YL section; it was full of human interest stories about YLs. Check out May and June '89 issues, and read about XE1MMJ and her endeavors during the 1985 earthquake.

I know there is the YLRL, which also publishes a magazine. But many XYLs who get interested in amateur radio because their husbands are involved, do so because they learn about other YLs in QST. Besides, OMs have been known to read about YLs.

QST seems to be pretty standard in most ham shacks. I began reading it prior to getting my license. Of course, I had many long months, as most of you know, to get acquainted with all ham magazines.

My reason for bringing this to your attention is to get you to write a letter in protest. As usual, one or two letters won't persuade any one to do or not to do anything - so OMs and YLs, get your pens in action. write to David Sumner, K1ZZ, (publisher of QST), ARRL, 225 Main Street, Newington, CT. 06111

via ARNS Newsletter

Current President Jim DuBreck, N4BYO, (left) awards out-going President Pete Thacher, N4HQZ, in recognition of 2 years of outstanding service to RARS. *(photo by MaryAnn DuBreck)*

Anita Kellum, KC4AQB, receives her award for outstanding Social Services to the club. The RARS picnic, Christmas Party, and Hamfest Social were all the result of Anita's efforts. *photo by MaryAnn DuBreck*

The Art of Soldering

Soldering is the primary assembly mechanism of electronics. It is a skill that is most important for all amateurs. Some notes on this basic operation are due. Soldering is covered nicely in many handbooks, the Heath manuals, and now, in the EXCITER. Like any other skill, soldering requires proper tools, proper materials, proper instruction and PRACTICE. The beginner is well advised to practice on a junk chassis of some sort, preferably with a skilled instructor.

What is solder? Electrical solder is an alloy of tin (Sn) and lead (Pb). It is found in varying proportions, but for electrical work, the 63-37 (63% Sn, 37% Pb) blend is much to be preferred. 60-40 is quite satisfactory. Other grades are best avoided, as they are meant for other applications.

What is soldering? Basically, the soldering operation is to heat two components above the melting point of the solder, permitting the solder to wet the surfaces and fill the gap between them. The solder provides a mechanical connection having good electrical conductivity.

What is flux? Flux is a material which chemically cleans the surfaces to be soldered to permit the solder to adhere to the surfaces being soldered. All flux is corrosive. The "non corroding" fluxes suitable for electrical / electronic work are generally rosin-based materials which are inert at room temperature, though corrosive at elevated (soldering) temperatures.

So called "non-corroding" paste fluxes and acid fluxes are absolutely not acceptable for use on or near electrical work. The common greasy paste flux ("No-Corrode," and similar products) are aqueous solutions of zinc chloride and ammonium chloride emulsified in grease. They are a hygroscopic, meaning they absorb moisture from the air, forming hydrochloric acid (HCl), and they are electrically conductive. Use of "paste" fluxes is certain to create shorts where there should be insulation, open circuits where connections should exist, and assorted other damage. Take the warning in every Heath manual at face value: Use of fluxes on a Heathkit, and all warranties are void.

Cold Solder Joints: A major cause of soldering problems is cold solder joints. There is a temperature range between fully solid and fully liquid in which the solder alloy is "plastic." If the solder is disturbed - vibrated or moved - while in this plastic state, it will not form a solid joint; rather, it will become a granular mass with very poor mechanical and electrical properties. And, worst of all, the cold solder joint can be hard to find. The fix is simple: re-heat above the melting point and let solidify undisturbed. The 63-37 solder has a very small plastic range and thus is nearly immune from cold solder problems - this alone is enough to make it's slightly higher cost well worth it.

The general radio worker is best advised to stay with a good grade of solder made for radio use, with a flux core. The Kester name is excellent, though there are other acceptable brands. 1/32 inch cored solder is good for most fine work, and 1/16 inch is good for heavier electrical work. The soldering iron used must be sized for the job at hand. Much printed circuit work calls for a pencil iron rated about 25 watts. A 100 watt iron is fine for heavier wiring. Chassis soldering can require an iron as large as 300 watts. The iron size required is determined by experience. With too small an iron, there just isn't enough heat to complete a connection, while too large a tool tends to overheat things you don't want heated. The common quick heat soldering gun has such poor heat control that it is difficult to use properly, and is best considered an emergency device if not avoided entirely.

David Heller, K3TX,
Penn Wireless Assn. "X-MITTER"
via ARNS

Short Wave Listeners Net on 40 Meters

Interested in Short Wave listening?? Tune in Sunday mornings at 10 AM (eastern) on 7240 KHz for the ANARC SWL Ham Net. Bob Brown, KW3F, is the SWL Net Moderator. By the way, if your are interested in listening to some short wave broadcast antics, try tuning between 7410 and 7420 KHz, (which is NOT in the ham bands. Theris is where all the clandestine broadcast pirates seem to congregate.

W5YI Report
2/15/90

Hams to Prove Typing Ability?

Israel's national radio society (Israel Amateur Radio Club [IARC]) has filed a formal proposal with the International Amateur Radio Union (IARU) that would replace the CW code test for HF privileges with "... proven knowledge of data codes ... [and] competence in manual keyboard operation ... at some specified speed, [with some] number of errors and erasures."

Written by Israeli ham Rob Roden, 4X4RR, who serves as the IARC's liaison officer to the IARU, the proposal cites increasing numbers of CW generating keyboards, and personal computers used on the HF bands.

"It has long been considered that the passing of a test in Morse proficiency, apart from being mandatory was strongly desired to show that the use of the HF bands for DX was a privilege well worth working for."

"It is still recognized that the privilege of access to the HF bands should be worked for, but the demonstration of ability should be made more in keeping with Amateur Radio as it is today. The increased usage of all the HF bands by many who are deterred by a CW test but would probably happily undertake some other form of demonstration of operating proficiency would reinforce our claim to protect our frequency allocations."

The Israeli IARU delegation envisions the operating examination would require knowledge of the CCITT Alphabet No. 2, the Van Duren code for AMTOR, the ASCII code, the AX.25 protocol for packet, and a practical test of keyboard proficiency.

W5YI Report, 3/1/90

[Ed. Note: This is NOT an April Fool's joke! Where this proposal will end up is anyone's guess. The IARU will be meeting in Spain early in the month. Stay tuned! (I hope the "no-code-ers" are happy!)]

After all is said and done,
much more is said than done.

HF Antenna for Apartment Dwellers

Advanced Electronic Applications, Inc., of Lynnwood, WA, has introduced a new low-profile high performance HF IsoLoop antenna designed by Professor Don Reynolds especially for AEA in association with Mike Staal, president of M2 Enterprises. Staal is also co-founder of KLM Electronics. The IsoLoop tunes 20 through 10 meters and is rated at 150 watts. The three foot square horizontal antenna is tuned remotely by a supplied control box. Because of its small size and weith (12 lbs.) it is the perfect balcony or an\ttic antenna and is ideal for areas with restricted antenna ordinaces. Omni-directional, a rotator is not necessary ... nor are ground radials. For more info, call AEA @ 206-775-7373

Gateway / QEX Merge

The ARRL advises that Gateway, The Packet Radio Newsletter, has been merged with QEX, the ARRL Experimenters Exchange. Published since 1984, Gateway is the chronicle of packet radio development. QEX aims to keep its readers up to date on Amateur Radio technology. Annual subscription to the new combined monthly publication is $10 to League members, $20 to others.

QSL Vilnius

While the new Lithuanian Republic and Soviet Union are locked in a controversy concerning self government, the ham community seems to have already achieved independence. Lithuanian amateurs are now using the LY prefix assigned before World War 2 instead of their Soviet designated UP prefix. QSLs for LY stations should go to Box 1000, Vilnius 232001, Lithuania, instead of Box 88 Moscow. Look for the Baltic states of Estonia and Latvia to follow (provided the Soviet tanks stay OUT of these countries).

W5YI 3/15/90

Using A Noise Bridge

Bill Ransier, N1BA

A noise bridge can be a real handy tool for the ham. For instance, we can use it for the following:

1. Adjust or trim antennas. (see Steve Modena's articles "MAKING ANTENNAS PLAY) More later on this.
2. Adjust your antenna tuner with no power on the antenna.
3. Measure capacitors and inductors.
4. Determine frequency of resonant circuits.
5. Measure coax:
   a. electrical length and thus velocity factor.
   b. characteristic impedance
   c. loss

Most recent transceivers feature a general coverage receiver that covers frequencies from 500 KHz to 30 MHz or more. This feature has made the noise bridge instrument a much more useful tool.

This month I will cover how a noise bridge can be used to measure the electrical length and velocity factor of a coaxial cable.

If we know the impedance of an antenna we can adjust it to the desired frequency. One way of being able to measure the impedance of an antenna is to make the feed line 1/2 wave length or multiples of a half wave. Then whatever impedance you measure at the feed line input is the impedance of the antenna. Unfortunately cable characteristics are not always as advertised so it is nice to check them. It is easy to do with a noise bridge and general coverage receiver.

Step 1. Tune the receiver to the frequency of interest. Attach a short circuit load to the noise bridge's UNKNOWN CONNECTOR and null the bridge.

Step 2. Attach a short circuit load to the far end of the cable and connect the near end to the bridge's UNKNOWN connector.

Step 3. Adjust the receiver frequency for a null.

Step 4. Tune the receiver upward in frequency until the next nullis found.

Step 5. Apply the following simple equations.

$$N = \frac{2 \times F(1)}{F(2) - F(1)}$$

where F(1) is the frequency of the first null, and F(2) is the frequency of the second or higher null. Round off N to the nearest whole number and use it in the following equation.

$$F = \frac{4 \times F(1)}{N}$$

F is the frequency at which the cable is one wave length long. If F is 14.2 Mhz then cable is a half wave for 7.1 Mhz. etc.

That was easy. Now lets see how the velocity factor can be figured. We apply the old equation for wave length in free space.

$$L(f) = \frac{984 \text{ feet}}{F}$$

Where L(f) = wave length in free space, and F is in MHz. Now measure the cable with a ruler and call this L.

$$\text{velocity factor} = \frac{L}{L(f)}$$

With this knowledge you can trim the coax to 1/2 wave length.

In a future article, we will talk about measuring impedance of coaxial cable.

73.

• • • •

MAKING ANTENNAS PLAY

by Steve Modena AB4EL

This installment continues the subject of single feed point / multi-dipole antennas. The example is a 20-17-15-12-10 meter bands wire antenna that I built in my attic. I will present how I chose the starting dimensions, how to trim the dipoles to target frequencies, what the resulting dimensions and electrical characteristics are, and--finally--some rules of thumb to apply generally.

These are the mechanical details. I screwed the feed point insulator to the center of the summit beam of the roof. Each dipole arm begins in an eyelet and stretches toward a far wall. The end of a dipole arm is a little loop. A cord is tied to that loop and stretched to a tie point (nail) on the wall. Fig. 1 shows the antenna arrangement from above and Fig. 2, from the side. Fig. 3 shows the height and width offset dimensions of the tie points on each facing wall. In no case does any dipole actually reach the wall. Note the arrangement of the dipoles by band. The 20- and 17-meter dipoles were intentionally made the "outside" dipoles. The 15-meter dipole is adjacent to 20; the 12 is adjacent to the 17. The 10-meter dipole is down the center. The center insulator is about 20 feet above ground. The rafters are sloping. The house frame is wooden; the shingles are tar on composite. There is house wiring in the attic floor joists.

The noise bridge was mounted at the feed point. See the March EXCITER article for the procedure for nulling and using the noise bridge to find antenna resonance frequency.

Past experience indicated that some of the dipoles would be somewhat longer than expected from the standard length formula L(ft.)=(492*0.95)/Freq.Mhz. To be safe, I began with very long dipoles for each band. The Theoretical Values Section of Table 1 gives the dimensions of standard dipoles for the target frequencies listed.

The Starting Values Section of Table 1 shows the actual starting lengths. I rounded the standard values to the next nearest foot and added a couple of more feet to sure of resonating below the target frequencies. Please note the actual resonance frequencies.

With all dipoles in place, I began by removing enough wire from the 20 meter dipole to bring it much closer to the target frequency--but not into the band. I recorded resonance frequencies of all of the antennas to monitor them for each shortening of the 20 meter antenna. Next I shortened the 17 meter antenna: it had already moved up in frequency by shortening the 20 meter antenna. Having approached the 17 meter band, I adjusted the 15, then 12 meter antennas, in turn. I decided to do nothing on 10 meters until the end.

Returning to the 20 meter dipole, which had risen slightly in frequency from adjusting the others, I brought it just inside the low end of 20 meters. Then I brought

TABLE 1

THEORETICAL VALUES			=STARTING VALUES=		========FINAL VALUES========			
Band	Target Freq. Mhz.	Dipole Length	Dipole Length	Resonant Freq Mhz	Freq. Mhz.	Length	Xr OHMS	Len. ratio
20	14.000	33.39 ft.	36.0 ft	12.153	14.074	28.71 ft.	50	0.86
17	18.068	25.87 ft.	28.0 ft	16.950	18.153	26.83 ft.	200	1.04
15	21.000	22.26 ft.	25.0 ft	20.730	21.295	24.21 ft.	165	1.10
12	24.890	18.78 ft.	21.0 ft	25.000	24.990	20.67 ft.	110	1.11
10	28.600	16.34 ft.	18.0 ft	28.475	28.600	18.79 ft.	185	1.15
(10)	--.--	--.--	--.-	27.880	27.980	--.--	185	-.--

the 17, 15 and 12 meters dipoles into their bands by shortening each one, in turn. Finally, I added wire to the 10 meter dipole to lower its frequency back to near the target frequency. Its frequency had risen quite a bit from the shortening of the adjacent 15 and 12 meter dipoles.

Inspecting the Final Values Section of Table 1, one can see that the 20 meter dipole is quite short (86%) compared to a standard dipole. All of the rest are progressively much longer than standard dipoles (up to 115%).

Only the 20 meter dipole has a resonance impedance near 50 ohms. The others are high enough to suggest that twin line would be a better match overall.

If one chose to "throw up" a multi-dipole antenna using standard dipole lengths, all dipoles would be "out of band" - some quite far from resonance. Feed point impedances would be large. Feeding high power to an antenna like that might require using open ladder line and a transmatch designed to handle high voltages due to high standing waves.

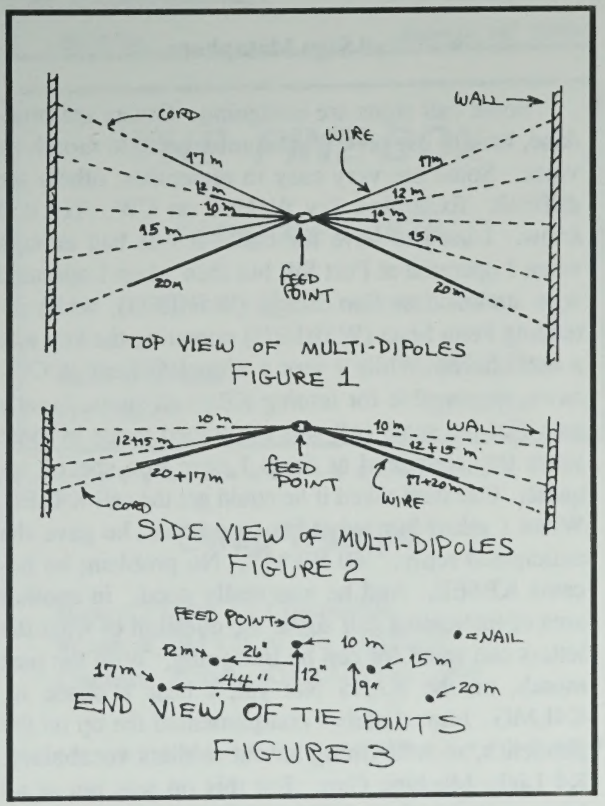
The bottom line of Table 1 shows a phantom resonance on the lower edge of 10 meters. That resonance was there before the 10 meter dipole was added lastly. The N4UOD multi-dipole discussed in March works extremely well on 10 meters, though it has no 10 meter dipole in the complement.

In conclusion, it is straight forward to tune a multi-dipole. Trimming one dipole at a time, longest to shortest, is feasible because no unpredictable or erratic interactions occur to undo progress. Checking resonances on all bands after each antenna adjustment allows management of frequency shift interactions that do occur. Unexpected resonances may occur that can be used to advantage. For this configuration of a multi-dipole, a standard dipole is a good starting point only for the longest dipole. The others should probably start at 125% of the standard counterparts, to be on the safe side.

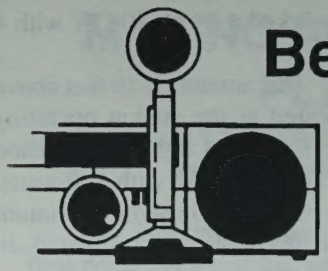
This kind of trimming is easily done if measurements are made at the feed point of the multi-dipole. If trimming is directed by measurements done at the end of a transmission line, there are several complicating factors to take into account.

Contacts were easily made with this antenna on each band. Compared to my 20 meter sloper, signal reports on the County Hunters Net were a little lower, but very acceptable. I worked a JA on 10 CW with 4 watts.

A SAFETY NOTE: This antenna is 10 feet above my head when I am seated at the station operating position. I experienced flashes of light in my vision when I worked 10 and 20 meter CW with 100 watts. Calculations based on a recent article about maximum RF field exposure puts this antenna--as situated--in the category of health hazard.



'Twas good to see 3 articles from a recent EXCITER grace the pages of the Amateur Radio News Service (ARNS) newsletter. ARNS is an association of newsletter editors, and their newsletter is full of "select" articles for other editors to use. EXCITER authors have made it into the ARNS letter before, (AB4EL, & AA4MY) but never 3 articles from ONE EXCITER! This past issue had WK2F's antenna article, AA4MY's contest article, and the telegraphy article we "borrowed" from the Yonkers NY ARC!!



Bert's Beat

"Bert" Bailey, W4FMN

Call Sign Metaphors

Some call signs are intriguing. Others are mundane, hard to use on CW or cumbersome to mouth on voice. Some are very easy to remember; others are difficult. Examples, Try W5HEF on CW. Try it I know. I used to have the call. It was bad enough when I operated at Fort Sill but then when I operated wile stationed at Fort Bragg (W5HEF/4), while attending Penn State (W5HEF/3) operating the key was a real chore. While I was a Signal Officer in Okinawa, responsible for issuing KR6 call signs, I made sure that the same call was not issued twice in three years (my tour) and at times I gave into special requests. One man asked if he could get the call KR6EE. When I asked him what his speed was, he gave the anticipated reply, "40 WPM". No problem; he became KR6EE. And he was really good. In another area of interesting call signs, the question of what the letters can stand for can be intriguing. With the past month, on the RARS Net yet, I hear a check in, K4LMG. Immediately I complimented the op on the phonetics, so well fitting an old soldiers vocabulary: K4 Light Machine Gun. But this op was not at all impressed or desirous of using these phonetics, he sed, he preferred "Love My Girl." So lets face it, I'm out of it. [Ed. Note: Obviously a lover, Bert, not a fighter!] At least I've kept my call sign (W4FMN) for many years -- unlike ol' Dave, who tried like a tiger to get K4NC but wound up in Oklahoma with K4OK, or ol' DX hound Bill, who could hardly wait to change his catchy K4CIA for a goody - goody "wait till I get my new call!" So what did bill inherit? K4PU!! [Ed. Again... Whats so bad about that?? My mother in law is WA2PUU es loves it! My XLY Joyce started out with WB2PUS -- but she's a nurse, so it didn't bother her!] So now, sadder, but much wiser, Dave uses his old K4YDY, and Bill, K4CIA. If you had just checked with me first, fellas ... !

* * * * * * *

Run for the Roses: Feb 18

As predicated in the last EXCITER, Bill, WB4CCA, did run the radio show at the NC Roadrunners' Club annual 5K, the Run for the Roses. He used the pro talents of his ol stand bys, Pat WA4CLT and Ben, N4AFO. All went smoothly and RARS can carve another notch on the porcelain base of it's 811s. I keep telling the ol gung-ho Marine Bill that he should be on the OTHER side of the mike, i.e. running, but he always give me the old "leg wound in combat" poop. C'mon Bill, lace 'em up and go on a roll. Think of the prestige of RARS. RARS must have been AIRBORNE! Why? RARS can do anything!

FCC sez Pirates to Pay More!

"The FCC is increasing the amount of the fine for unauthorized operation of a radio station. The usual amount for a first violation will jump from $750 to $1,000.

The routine amount for a first violation of unauthorized operation in the Aviation, Marine, Public Safety and Special Emergency Radio Services is increasing from $1,000 to $1,250. Prices may be going up, the FCC reminds you that traditional measures including license revocation / suspension, criminal penalties and seizure of equipment will still be available for those who abuse the spectrum. "The increases were prompted by numerous complaints of interference resulting from piracy of the airwaves,: the FCC said in a March 5 news release.

The latest pirate to receive an FCC "QSL" is Eloy Escagedo, of Miami (FL). He was fined $1,000 for transmitting music and commentary on 7350 KHz."

W5YI Report
3/15/90

Call Sign Mugs

Your amateur radio call sign on a 10 oz. distinctive, high quality, stoneware coffee mug. Your choice of the ARRL or QCWA logo on the flip side. Get one for the shack and one for the work place. Mug pairs can have the same or different call signs. Coffee mugs are $8.95 each, or two for $15.95. Different call signs allowed. Names added $1.00 extra per cup. Price includes S/H for the continental US and APO.

Excellent Gifts or Club Awards!

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Encyclopedia on a Disc!

Radio Shack now offers Britannica's 26 volume Compton MultiMedia Encyclopedia on a **single** 5" CD-ROM. Tandy's new IBM compatible 2500 XL (10 MHz 286 based) computer comes equipped with a VGA monitor, an internal CD-ROM drive, and MS-DOS 3.3 in ROM. The software features 15,000 photographs, many in full color, animated sequences, 60 minutes of sound, 5,800 maps, charts and graphs, 1,500 word speech, and the complete Webster Intermediate Dictionary. It was introduced on Feb. 27th at the 5th Annual CD-ROM Conference in San Francisco.

W5YI
3/15/90

Swap Wanted:

Have: 12 MHz AT Compatible.
Want: ICOM 475 or 275 VHF/UHF
Contact: Woody, KJ4SO @ 848-1844

For Sale:

Uniden HR-2510 10m mobile w/ PS.
Excellent condx. $225 /nego.

ALSO

11m AM/SSB. Good for Conversion to 10.
Contact **Pete, N4UOE @ 365-3751**

Amateur Radio -- A National Resource

Raleigh Amateur Radio Society, Inc.
P.O. Box 17124
Raleigh, NC 27619

Next Regular RARS Meeting: Wednesday, April 4, 7:30 PM
Raleigh YMCA , 1601 Hillsborough St.
RARS Nets: Daily @ 8:00 PM on 146.04/64
Tuesday, 7:00 PM on 28.364
Technical Information Net - Saturday, 8:30 PM on 146.04/64
RARS Computer Bulletin Board: 781-2530

Events Calendar

Apr	04	Regular RARS Meeting, 7:30 PM, YMCA -- Bring a friend!
Apr	**07**	**RARS Hamfest Social, 7:00 - 9:15 PM; Wouff Hong Ceremony @ 9:30!!**
Apr	**08**	**HAMFEST!! Raleigh - 8:00 AM - 4:00 PM NC Fairgrounds**
Apr	**08**	**Exams** - Holshouser Bldg, NC Fairgrounds - **11:00AM - Prereg w/ AA4MY**
Apr	12	RARS VHF/UHF SIG Meeting, WA4MJF's QTH, 7:30. Info 266-4434
Apr	18	RARS Advisory Board Meeting 7:00 PM YMCA. All welcome!
Apr	24	RARS 2 meter FM SIG Meeting, YMCA, 7:30 PM Info AB4OZ
May	02	Regular RARS Meeting - 7:30 PM, YMCA
May	**26**	**Hamfest!! Durham** 8:00 AM - 4:00 PM; South Square Mall (also Exams, call Pete Goolsby, KY4Y, @ 544-3215)